

**WHAT IS CLAIMED IS:**

1. A method comprising the steps of:  
providing a waveform shaper for waveform shaping  
input signal light and outputting output signal light;  
measuring the quality of said output signal light;  
and  
controlling the power of said input signal light so  
that said quality measured is improved.
2. A method according to claim 1, wherein said  
controlling step comprises the steps of providing an  
optical amplifier for amplifying said input signal light,  
and adjusting the gain of said optical amplifier.
3. A method according to claim 1, wherein said  
quality is a Q factor of a signal obtained according to  
said output signal light.
4. A method according to claim 1, wherein said  
quality is a bit error rate of a signal obtained  
according to said output signal light.
5. A method according to claim 1, wherein said  
quality is a spectrum shape of said output signal light.
6. A method according to claim 1, wherein said  
quality is an eye opening of a signal obtained according  
to said output signal light.
7. A device comprising:

a waveform shaper for waveform shaping input signal light and outputting output signal light;

means for measuring the quality of said output signal light; and

a power controller for controlling the power of said input signal light so that said quality measured is improved.

8. A device according to claim 7, wherein said power controller comprises an optical amplifier for amplifying said input signal light and a controller for adjusting the gain of said optical amplifier so that said quality is most improved.

9. A device according to claim 7, wherein said power controller comprises an optical amplifier for amplifying said input signal light, an optical attenuator for attenuating an output from said optical amplifier, and a controller for adjusting the attenuation of said optical attenuator so that said quality is most improved.

10. A method comprising the steps of:

providing a waveform shaper having a variable threshold for waveform shaping input signal light according to said variable threshold and outputting output signal light;

measuring the quality of said output signal light;

and

controlling said variable threshold so that said quality measured is improved.

11. A method according to claim 10, wherein:

said waveform shaper comprises a semiconductor optical amplifier; and

said controlling step comprises the step of adjusting an injection current to be supplied to said semiconductor optical amplifier.

12. A method according to claim 10, wherein:

said waveform shaper comprises a distributed feedback laser diode adapted to change said variable threshold according to the power of assist light supplied thereto; and

said controlling step comprises the step of adjusting the power of said assist light.

13. A device comprising:

a waveform shaper having a variable threshold for waveform shaping input signal light according to said variable threshold and outputting output signal light;

means for measuring the quality of said output signal light; and

a controller for controlling said variable threshold so that said quality measured is improved.

14. A device according to claim 13, wherein:  
said waveform shaper comprises a semiconductor optical amplifier; and  
said controller adjusts an injection current to be supplied to said semiconductor optical amplifier.

15. A device according to claim 13, wherein:  
said waveform shaper comprises a distributed feedback laser diode adapted to change said variable threshold according to the power of assist light supplied thereto, and a light source for outputting said assist light; and  
said controller adjusts the power of said assist light.